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SPECIES, PURE AND IMPURE¹

THERE has come about in recent years a profound modification of our conception of a species in that the botanist, at any rate, is compelled to recognize the fact that Nature presents large numbers of successful kinds of plants that reproduce their types either wholly or in high percentages, but which clearly have germinal constitutions of a hybrid character. These forms may legitimately be described and classified as species and they are frequently virile lines of evolution making up groups of individuals that readily maintain themselves in suitable habitats. As assemblages of like individuals, hybrid as to their germ plasm, they present subjects of study that were not differentiated by the earlier naturalists from the populations of species as they viewed them.

The test of a species, in addition to the characters that distinguish it, has always been the evidence that it breeds true to its peculiarities or so nearly true that variations from the type may be passed over in the descriptive writings of the systematist as exceptions of little importance to the mind seeking for order and rebellious of mental disturbance in his efforts to express this order in accounts of faunas and floras over the earth. There are, then, chiefly as the result of genetical studies of the near present, two conceptions of species.

There is the *pure species* breeding true because its germ-plasm in the diploid condition carries two similar sets of factors, each set contributed by one of the parents and each set having the same genetic make up except for those factors responsible for sex and for sex-linked characters. The pure species was in the main the concept of Darwin and the older naturalists, and it was assumed to be representative of species. As viewed by the cytologist, confident that chromosomes carry

¹ Address of the president of the American Society of Naturalists, thirty-ninth annual meeting, Toronto, December 29, 1921.